



NOTICE TO BIDDERS, INSTRUCTIONS TO BIDDERS, BID FORM, AGREEMENT FORM,
GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, AND SPECIFICATIONS

FOR

2016 CITY HALL DEMOLITION PROJECT

Redevelopment Commission
City of West Lafayette
222 N. Chauncey Ave.
West Lafayette, Indiana

SECTION 00003

CITY OF WEST LAFAYETTE, INDIANA

2016 CITY HALL DEMOLITION PROJECT

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END OF SECTION

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NOTICE TO BIDDERS

The Redevelopment Commission of the City of West Lafayette, Indiana will receive sealed bids for the **2016 CITY HALL DEMOLITION PROJECT** until the hour of **8:30 AM** local time on **Tuesday, December 27, 2016** at the Office of the Clerk, Morton Center, 222 N. Chauncey Ave. Room 101, West Lafayette, Indiana 47906 for the completion of the work hereinafter listed. All bids received by said time will be held unopened and then taken to the Board of Public Works meeting at the Morton Community Center Multi-Purpose Room, 222 N. Chauncey Ave., West Lafayette, IN 47906 and there be publicly opened and read aloud. Late bids will be returned unopened. No oral, telephoned, telegraphed, facsimile, or email bids or changes to bids will be considered.

This project consists of, but is not limited to, demolition and property removal and disposal of the city hall building, parking lot asphalt removal, grading, and seeding on the property site located at 609 W Navajo Street.

Bids must be entered upon the bid form and the State Board of Accounts Contractor's Bid for Public Work Form 96 (Revised 2013) submitted in triplicate with the bid and non-collusion affidavit properly executed, and must comply with the statutes of Indiana and with the rules and regulations of the State Board of Accounts of Indiana. Bids shall be in a sealed envelope marked **"2016 CITY HALL DEMOLITION PROJECT"**. Forms are available at the City Engineer's Office, 222 N. Chauncey Ave. Room 102, West Lafayette, Indiana.

The bid must be accompanied by a certified or cashier's check or bid bond in an amount not less than five percent (5%) of the total bid price made in favor of the City of West Lafayette, Indiana, which amount shall accrue to and become the property of the City should the Bidder, awarded the contract, fail to enter into the required written agreement and secure same with the required one hundred percent (100%) performance, payment and guarantee bond. Wage rates shall not be less than the common construction wage as determined pursuant to IC 5-16-7-1 et seq. as amended.

Instructions to Bidders, General Conditions, Special Conditions and Specifications are on file at the Office of the Clerk. Copies may be obtained on and after December 8 without deposit, from the Office of the City Engineer, City Hall, 222 N. Chauncey Ave. Room 102, West Lafayette, Indiana, phone (765) 775-5130.

Bids remain in effect for sixty (60) days. The Board reserves the right to reject any or all bids and waive irregularities of bidding.

CITY OF WEST LAFAYETTE REDEVELOPMENT COMMISSION

Larry Oates, President Redevelopment Commission

Publish: 12/08/16 & 12/15/16

END OF SECTION

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INSTRUCTIONS TO BIDDERS

ARTICLE 1 DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General conditions of the Construction Contract and Supplementary Conditions.

ARTICLE 2 COPIES OF BIDDING DOCUMENTS

- 2.01 Refer to the Notice to Bidders for information on how and where copies of the Bidding Documents may be examined or obtained.
- 2.02 Complete sets of Bidding Documents must be used in preparing bids; the City of West Lafayette does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 The City of West Lafayette, in making copies of the Bidding Documents available does so only for the purpose of obtaining bids on the work and does not confer a license or grant for any other use.

ARTICLE 3 QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the work, each Bidder must complete the Experience Questionnaire on State Board of Accounts Contractor's Bid for Public Work Form 96 (Revised 2013). The Bidder's financial statement shall be submitted in a separately sealed envelope, clearly marked Bidder's Financial Statement, enclosed in the sealed envelope containing the bid. The financial statement will be returned to the Bidder unopened with his Bid Security unless it is necessary to open the envelope for the purpose of determining the award. The financial statement submitted by the successful Bidder will be retained by the City.
- 3.02 Bidders who are nonresident corporations shall furnish to the City a certified copy of the Certificate of Authority to do Business in Indiana issued by the State of Indiana within 15 calendar days of notice to do so. Such notice will be given to Bidders who are nonresident corporations, to whom it appears an award will be made, and the copy of the certificate must be filed with the City before the award will be made. Failure to promptly submit this evidence of qualification to do business in the State of Indiana may be basis for rejection of the bid.
- 3.03 Each bidder must ensure that to the greatest extent feasible, opportunities for training and employment should be given to lower income residents of the project

area and purchases and/or contracts for work in connection with the project should be awarded to small business concerns which are located in, or owned in substantial part by persons residing in, the area of the project.

- 3.04 Any one of the following causes may be considered as sufficient for the disqualification of a Bidder and the rejection of its bid.
- A. More than one bid for the same work from one individual, firm, or corporation under the same or different names.
 - B. Evidence of collusion among Bidders. Participants in such collusion will receive no recognition as Bidders for any future work of the City of West Lafayette until any such participant shall have been reinstated as a qualified Bidder.
 - C. Lack of competency and adequate machinery, plant, and other equipment, as revealed by the Financial Statement and Experience Questionnaire.
 - D. Unsatisfactory performance record as shown by past work judged from the standpoint of workmanship and progress.
 - E. Uncompleted work which, in the judgment of the City, might hinder or prevent the prompt completion of additional work if awarded.
 - F. Failure to pay, or satisfactorily settle, all bills due for labor and material on former contracts in force at the time of the bid opening.
- 3.05 Pursuant to IC 5-22-16.5-13, prior to award of contract the bidder must certify in writing that they are not engaged in investment activities in Iran. Failure to promptly submit this documentation may be basis for rejection of the bid.

ARTICLE 4 EXAMINATION OF CONTRACT DOCUMENTS, OTHER RELATED DATA, AND SITE

- 4.01 It is the responsibility of each Bidder before submitting a bid to:
- A. Examine and carefully study the Bidding Documents, including any Addenda and the other related data identified in the Bidding Documents;
 - B. All Bidders are to inform themselves of the conditions under which the work is to be performed, the site of the work, the obstacles which may be encountered, and all other relevant matters concerning the work to be performed. The successful Bidder will not be allowed any extra compensation by reason of any matter or thing concerning which said Bidder might have fully informed himself, because of his failure to have so informed himself prior to the bidding.
 - C. Become familiar with and satisfy Bidder as to all federal, state, and local laws and

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regulations that may affect cost, progress, or performance of the work;

- D. To study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data;
- E. Verify for themselves the accuracy of said quantities for their bidding purposes and adjust as necessary to satisfy the accuracy of their bids. Any and all quantities listed in these construction documents are approximate and for estimate purposes only. Any estimated quantity shown as UNDISTRIBUTED, shall be included in the base bid and be used to obtain a unit price based on the anticipated quantity. In other words, where 100 LF of drain tile is shown as an undistributed item, the bidder should include that quantity in their base bid and reflect the corresponding unit price, as requested, to allow additions or deletions to the anticipated quantity as determined by field conditions;
- F. To promptly notify Engineer of all conflicts, errors, ambiguities, or discrepancies which Bidder has discovered in or between the Contract Documents and other such related documents. Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the City at least four (4) days prior to the date for receipt of bids;
- G. Become aware of the general nature of the work to be performed by the City and others at the site that relates to the work as indicated in the Bidding Documents;
- H. Correlate the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
- I. Agree at the time of submitting its bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its bid for performance of the work at the price bid and within the times and in accordance with the other terms and conditions of the Bidding Documents; and
- J. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the work.

4.02 The submission of a bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the bid is premised upon performing and furnishing the work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer

are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the work.

ARTICLE 5 PRE-BID CONFERENCE

5.01 No scheduled Pre-bid for this project.

ARTICLE 6 SITE AND OTHER AREAS

6.01 The site is identified in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the work are to be obtained and paid for by Contractor. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by the City unless otherwise provided in the Bidding Documents.

ARTICLE 7 INTERPRETATIONS AND ADDENDA

7.01 No interpretation of the meaning of the Plans, Drawings, or other Contract Documents will be made to any Bidder orally. All questions about the meaning or intent of the bidding documents are to be directed to the City Engineer's Office in writing, mailed to: 222 N. Chauncey Ave. Room 102, West Lafayette, Indiana 47906. Interpretations or clarifications considered necessary by the Engineer in response to such questions will be issued by addenda. Addenda will be mailed or delivered to all who are known by the City of West Lafayette to have received a complete set of Bidding Documents. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose. No Addenda will be issued later than three (3) days prior to the date for receipt of bids except an Addendum, if necessary, postponing the date for receipt of bids or withdrawing the request for bids. Each bidder shall ascertain prior to submitting his bid that he has received all Addenda issued, and he shall acknowledge their receipt in his bid.

7.02 Any interpretation, correction or change of the Bidding Documents will be made by Addendum. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and bidders shall not rely upon such interpretations, corrections and changes.

ARTICLE 8 BID SECURITY

8.01 Each bid must be accompanied by bid security made payable to the City of West Lafayette in an amount of five percent (5%) of Bidder's maximum bid price and in the form of a certified or bank cashier's check or a Bid Bond, on the form attached, issued

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by a surety meeting the requirements of paragraphs 8.01 and 8.02 of the General Conditions.

- 8.02 The bid security of the successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the bid security will be returned. If the successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within fifteen (15) days after the Notice of Award, the City may annul the Notice of Award and the bid security of that Bidder will be forfeited. The bid security of other Bidders whom the City believes to have a reasonable chance of receiving the award may be retained by the City until the earlier of the seventh day after the effective date of the agreement or the 90th day after the bid opening, whereupon bid security furnished by such Bidders will be returned.
- 8.03 Bid security of other Bidders whom the City believes do not have a reasonable chance of receiving the award will be returned within seven days after the bid opening.

ARTICLE 9 CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the work is to be completed and ready for final payment are set forth in the Agreement and in the Bid Form.

ARTICLE 10 LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages are set forth in the Agreement, if applicable.

ARTICLE 11 SUBSTITUTE AND "OR EQUAL" ITEMS

- 11.01 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution. No substitution will be considered unless written request for approval has been submitted by the Bidder and has been received by the City Engineer at least five (5) days prior to the date for receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or work that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the person who proposes it. The City Engineer's decision of approval or disapproval of the proposed substitution shall be final. If the City Engineer approves any proposed substitution, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

- 11.02 Before any contract is awarded, the Bidder may be required to furnish a complete statement of origin, composition, and manufacture of any or all materials to be used in the construction of the work together with samples. These samples may be subjected to tests provided for in these specifications to determine their quality and fitness for the work.

ARTICLE 12 PREPARATION OF BID

- 12.01 The Bid Proposal Form is included with the Bidding and Contract Documents. Prepare and present the Bid Form, including a fully executed State Board of Accounts Contractor's Bid for Public Work Form 96 (Revised 2013) together with the Additional Provisions, in accordance with the Instructions to Bidders.
- 12.02 All blanks on the Bid Form shall be completed by printing in black ink and the bid signed. A bid price shall be indicated for each bid item listed therein.
- 12.03 A bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- 12.04 A bid by a partnership shall be executed in the partnership name and signed by a partner, whose title must appear under the signature, accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.
- 12.05 A bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown below the signature.
- 12.06 A bid by an individual shall show the Bidder's name and official address.
- 12.07 A bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture must be shown below the signature.
- 12.08 Print all names in black ink below the signatures.
- 12.09 Acknowledge receipt of all Addenda on the Bid Form.
- 12.10 Show the address and telephone number for communications regarding the bid.
- 12.11 Provide evidence of authority to conduct business as an out-of-state corporation in

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the State of Indiana in accordance with Article 3 above. Show state contractor license number, if any.

- 12.12 Provide verification that it is enrolled and participating in the E-Verify program in accordance with Indiana Code 22-5-1.7-11.

ARTICLE 13 SUBMITTAL OF BID

- 13.01 A bid shall be submitted no later than the time and place indicated in the Notice to Bidders and shall be enclosed in a sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the bid is submitted) and name and address of Bidder, and accompanied by the bid security and other required documents. If the bid is sent through the mail or other delivery system, the sealed envelope containing the bid must be enclosed in a separate envelope plainly marked on the outside with the notation “**BID – 2016 City Hall Demolition Project**”. A mailed bid shall be addressed to City of West Lafayette, 222 N. Chauncey Ave. Room 101, West Lafayette, Indiana 47906 and sent by Certified Mail. Mailed bids must be received no later than the time fixed for opening bids.

ARTICLE 14 MODIFICATION AND WITHDRAWAL OF BID

- 14.01 A bid may be modified or withdrawn by an appropriate document duly executed in the manner that a bid must be executed and delivered to the place where bids are to be submitted prior to the date and time for the opening of bids.
- 14.02 If, within 24 hours after bids are opened, any Bidder files a duly signed, written notice with the City and promptly thereafter demonstrates to the reasonable satisfaction of the Engineer that there was a material and substantial mistake in the preparation of its bid, that Bidder may withdraw its bid and the bid bond will be returned. Thereafter, that Bidder will be disqualified from further bidding on the work to be provided under the Contract Documents.

ARTICLE 15 OPENING OF BIDS

- 15.01 Bids will be opened at the time and place indicated in the advertisement or Notice to Bidders and, unless obviously nonresponsive, read aloud publicly.

ARTICLE 16 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 16.01 All bids will remain subject to acceptance for 60 calendar days after the day of the bid opening, but the City may, in its sole discretion, release any bid and return the Bid Security prior to that date.

ARTICLE 17 AWARD OF CONTRACT

- 17.01 The City reserves the right to reject any or all bids, including, without limitation, the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional bids and to reject the bid of any Bidder if the City believes that it would not be in the best interest of the project to make an award to that Bidder, whether because the bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the City. The City also reserves the right to waive all information not involving price, time or changes in the work and to negotiate contract terms with the successful Bidder. Discrepancies between the multiplication of units of work and unit prices will be resolved in favor of unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum figures will be resolved in favor of correct sum figures. Discrepancies between the sum amount in figures and the amount in words will be resolved in favor of the words.
- 17.02 In evaluating bids, the City will consider whether or not the bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 17.03 The City may conduct such investigations as the City deems necessary to establish the responsibility, qualifications and financial ability of Bidders to perform the work in accordance with the Contract Documents.
- 17.04 If the contract is to be awarded, the City will award the contract to the bidder whose bid will be in the best interests of the project.

ARTICLE 18 CONTRACT SECURITY AND INSURANCE

- 18.01 Article 8 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth the City's requirements as to performance and payment bonds and insurance. When the successful Bidder delivers the executed Agreement to the City, it must be accompanied by such bonds.
- 18.02 Article 8 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth the City's requirements as to insurance. Certificates of Insurance (and other evidence of insurance requested by the City or other additional insured) must be furnished, as required, before beginning work.

ARTICLE 19 SIGNING OF AGREEMENT

- 19.01 When the City gives a Notice of Award to the successful Bidder, it will be accompanied

by the required number of unsigned counterparts of the Agreement with the other Contract Documents, which are identified in the Agreement as attached thereto. Within 15 days thereafter, successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to the City with the required Bonds. Within ten days thereafter the City shall deliver one fully signed counterpart to successful Bidder.

ARTICLE 20 SALES AND USE TAX

20.01 The City is exempt from Indiana State Sales and Use Taxes on materials and equipment to be incorporated in the work. Said taxes shall not be included in the contract price.

ARTICLE 21 RETAINAGE

21.01 Provisions concerning retainage are set forth in the Agreement.

END OF SECTION

SECTION 00300

BID PROPOSAL FORM**2016 CITY HALL DEMOLITION PROJECT**

Each contractor shall complete this form and submit it with his bid. The Total Base Bid amount should include the cost necessary to complete all work described by these documents. Unit prices shall apply to addition or deductions, by change order, to the contract as required/requested by the Owner.

ITEM NO.	ITEM NAME	QUANTITY	UOM	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION AND DEMOBILIZATION	1.00	LS		
2	SITE CLEARING	1.00	LS		
3	ASPHALT PAVEMENT REMOVAL	1,967	SYS		
4	ASPHALT PAVEMENT SAWCUT	48.00	LFT		
5	CURB REMOVAL, ALL TYPES	533.00	LFT		
6	SITE CONCRETE SIDEWALK, RAMP, STAIR REMOVAL, ALL TYPES	495	SYS		
7	SITE WALL REMOVAL, ALL TYPES	479	SYS		
8	BUILDING DEMOLITION AND REMOVAL	1.00	LS		
9	SITE UTILITY DEMOLITION AND REMOVAL	1.00	LS		
10	SITE FURNISHING DEMOLITION AND REMOVAL	1.00	LS		
11	COMMON EXCAVATION	2,400.00	CYS		
12	CAP ABANDONED UTILITIES	1.00	LS		
13	TEMPORARY SILT FENCE	525.00	LFT		
14	TREE PROTECTION FENCE	240.00	LFT		
15	INLET PROTECTION	3.00	EACH		
16	MULCHED SEEDING	4,367	SYS		
17	EROSION CONTROL BLANKET	360.00	SYS		
18	AGGREGATE FOR CONSTRUCTION ENTRANCE	39	TON		
19	GEOTEXTILE FOR CONSTRUCTION ENTRANCE	137	SYS		
20	CURB REPAIR, REHABILITATION	180.00	LFT		
21	ASPHALT REPAIR	877	SYS		
TOTAL =					

CONTRACTOR _____

TOTAL BID PRICE: _____

(amount in words)

\$ _____

(amount in figures)

RECEIPT OF ADDENDUM (NUMBER) _____

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Additional Provisions

1. Bidder acknowledges that quantities are not guaranteed and final payment will be based on actual quantities determined as provided in the Contract Documents.
2. Bidder agrees that once the Notice to Proceed is issued, work will be completed in accordance with the following:

All work shall achieve completion by April 30, 2017.

4. The following documents are attached to and made a condition of this Bid:
 - a. Required Bid Security in the amount of five percent (5%) of the Bid in the form of a certified or cashier's check, or a bid bond. The Bid Security will be retained or returned in accordance with Article 8 of the Instructions to Bidders.
 - b. Required executed copy of Bidder's Qualification Statement with supporting data.
 - c. Required Bidder's Financial Statement.
5. The terms used in this Bid which are defined in the General Conditions or Instructions to Bidders will have the meanings indicated in the General Conditions or Instructions to Bidders.
6. Accompanying this Bid is a certified check, a bank cashier's check, or bid bond which shall become the property of the City of West Lafayette, Indiana, if this Bid shall be accepted by the City of West Lafayette, Indiana, and the undersigned bidder fails to furnish the required bonds and insurance within fifteen (15) days and to enter into a Contract within thirty (30) days after the City's acceptance of this Bid.

IN WITNESS WHEREOF, this Bid is hereby signed and sealed as of the date indicated.

Date: _____

Bidder: _____

By: _____
Printed name of signer

Title of signer

END OF SECTION

SECTION 00500

AGREEMENT FORM

2016 CITY HALL DEMOLITION PROJECT

This agreement, made this ____ day of _____, **20__** at West Lafayette, Indiana, by and between the City of West Lafayette Redevelopment Commission as well as the City of West Lafayette Board of Public Works (hereinafter referred to as the "City") and - _____ (hereinafter referred to as the "Contractor").

WITNESSETH:

That in consideration of the mutual covenants hereinafter set forth, the City and the Contractor agree as follows:

Article 1: SCOPE OF WORK

The Contractor shall furnish all labor and tools and equipment and do all things required for complete installation, construction, and resurfacing in accordance with the plans and specifications. The plans and specifications shall be on file in the office of the City Engineer.

Article 2: PAYMENT

The City shall pay to the Contractor, in full and complete payment for all performance of the Contract, in current funds. The estimated sum of \$_____ defined as the contract price, and computed from the Contractors Bid included herein. The final contract price will be the result of the actual installed quantities of materials multiplied by the corresponding contract unit prices. Variance from the estimated plan quantities will be done by change order for any additions or deletions to the contract as determined by the work and approved by the West Lafayette Redevelopment Commission.

Said contract price shall be paid to the Contractor in installments in the manner provided in, and under conditions of, the General Conditions.

If litigation is commenced to enforce any term of this contract, the prevailing party is entitled to receive litigation costs including reasonable attorney fees.

Article 3: CONTRACT DOCUMENTS

The following contract documents are include this agreement: the General Conditions, Special Conditions, Materials Specifications, the Contractor's maintenance bond, and the Contractor's certification of insurance, together with plans and any subsequent addenda.

Said documents are hereby incorporated into and made a part of this agreement the same as if herein fully set forth.

Article 4: SEVERANCE

The intent of the parties is that this agreement be deemed entire in the sense that its purpose is to establish one price for the doing of the whole work, and that it be deemed severable in the sense that the voidance of any part or portion shall not void the remainder.

It is understood and agreed that partial payments may be made for the mutual convenience of the City and Contractor but shall not be construed as the City's acceptance of a part or portion of the work. Acceptance is to only in the manner prescribed in the General Conditions.

Article 5: RECORDS

The Contractor will maintain proper records for review by the City.

Article 6: DATE OF COMPLETION

The Contractor agrees that the work contained in the contract shall be completed in accordance with the following:

All work shall achieve completion by April 30, 2017.

Article 7: INSURANCE

During construction of the Project, Contractor shall maintain policies of insurance for Workers' Compensation as well as general liability insurance in the amount of \$1,000,000 or more. Each such policy shall: (a) be written by a company reasonably acceptable to City; and (b) provide that it shall not be modified or canceled without written notice to City at least 30 days in advance. The policy of general liability insurance required by this Section to be maintained by Contractor shall name the City as an additional insured. Contractor shall deliver to the City certificates of the insurance policies required by this Section, executed by the insurance company or the general agency writing such policies.

Article 8: INDEMNITY AND HOLD HARMLESS AGREEMENT.

The City shall be indemnified, held harmless, and defended by Contractor for any claims whatsoever arising out of, as a result of, or in connection with the work performed by Contractor including, but not limited to:

(i) injury to, or death of, persons or loss of, or damage to, property, suffered in connection with performance of any work on the project site by Contractor or any party acting by, under, through, or on behalf of Contractor;

(ii) the negligence or willful misconduct of Contractor or any party acting by, under, through, or on behalf of Contractor; or

(iii) the breach by Contractor of any term or condition of this Agreement;

Further, Contractor shall be responsible for obtaining or maintaining any permits required by any governmental or public or private administrative body, whatever it may be, in connection with the services set out in Article 1. Contractor shall be required to ensure that the company, and its operations in connection with the services set out in Article 1, conform to any applicable statutes, regulation, ordinances, treaties, rules of common law, or other law.

Article 9: PREVAILING PARTY – ATTORNEY FEES

Notwithstanding any term or condition in this Contract to the contrary, in the event litigation is commenced to enforce any term or condition of this Contract, the prevailing party shall be entitled to costs and expenses of litigation including a reasonable attorney fee.

Article 10: ENGAGING IN ACTIVITIES WITH IRAN

By signing this Contract, Contractor certifies that it is not engaged in investment activities in the country of Iran as set forth in I.C. 5-22-16.5.

Article 11: E-VERIFY

Contractor shall comply with E-Verify Program as follows:

- a. Pursuant to IC 22-5-1.7, Contractor shall enroll in and verify the work eligibility status of all newly hired employees of Contractor through the E-Verify Program (“Program”). **Contractor** is not required to verify the work eligibility status of all newly hired employees through the Program if the Program no longer exists.
- b. **Contractor** and its subcontractors shall not knowingly employ or contract with an unauthorized alien or retain an employee or contract with a person that Contractor or its subcontractors subsequently learns is an unauthorized alien. If Contractor violates this Section 7(b), the City shall require Contractor to remedy the violation not later than thirty (30) days after the City notifies **Contractor**. If Contractor fails to remedy the violation within the thirty (30) day period, the City shall terminate the contract for breach of contract. If the City terminates the contract, Contractor shall, in addition to any other contractual remedies, be liable to the City for actual damages. There is a rebuttable presumption that Contractor did not knowingly employ an unauthorized alien if Contractor verified the work eligibility status of the employee through the Program.

- c. If Contractor employs or contracts with an unauthorized alien but the City determines that terminating the contract would be detrimental to the public interest or public property, the City may allow the contract to remain in effect until the City procures a new contractor.
- d. **Contractor** shall, prior to performing any work, require each subcontractor to certify to **Contractor** that the subcontractor does not knowingly employ or contract with an unauthorized alien and has enrolled in the Program. Contractor shall maintain on file a certification from each subcontractor throughout the duration of the Project. If Contractor determines that a subcontractor is in violation of this Section 7(d), **Contractor** may terminate its contract with the subcontractor for such violation. Such termination may not be considered a breach of contract by Contractor or the subcontractor.
- e. By its signature below, Contractor swears or affirms that it i) has enrolled and is participating in the E-Verify program, ii) has provided documentation to the City that it has enrolled and is participating in the E-Verify program, and iii) does not knowingly employ an unauthorized alien.

Article 12: NON-DISCRIMINATION

Contractor agrees:

- a. That in the hiring of employees for the performance of work under this contract or any subcontract hereunder, no contractor, or subcontractor, nor any person acting on behalf of such contractor or subcontractor, shall, by reason of race, religion, color, sex, national origin or ancestry, discriminate against any citizen of the State of Indiana who is qualified and available to perform the work to which the employment relates;
- b. That no contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, religion, color, sex, national origin or ancestry;
- c. That the City may deduct from the amount payable to the contractor a penalty of five dollars (\$5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of the contract;
- d. If there is a second or any subsequent violation of the terms or conditions of this section, then this contract may be cancelled or terminated by City and all money due or to become due hereunder will be forfeited.

IN WITNESS WHEREOF we have set our hands the day and year first above written.

CONTRACTOR:

WEST LAFAYETTE REDEVELOPEMENT COMMISSION:

Name, Title
Company Name

Lawrence T. Oates, President

Johari Miller Wilson, Secretary

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IN WITNESS WHEREOF we have set our hands the day and year first above written.

CONTRACTOR:

Name, Title
Company Name

WEST LAFAYETTE BOARD OF PUBLIC WORKS:

Sana G. Booker, President

Bradley L. Cohen, Member

Brooke E. Folkers, Member

Thomas J. Kent, Member

Jason D. Huber, Member

Attest:

Nichole A. Foster, Deputy Clerk

END OF SECTION

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SECTION 00700

STANDARD GENERAL CONDITIONS

*TO GOVERN CONSTRUCTION, REPAIR AND MAINTENANCE
CONTRACTS WITH THE CITY OF WEST LAFAYETTE, INDIANA*

**Adopted July 13, 2009 by the Board of Public Works and Safety
of the City of West Lafayette, Indiana**

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ARTICLE 1 SCOPE

- 1.01 Contractor shall furnish all labor and materials, equipment, services, tools, fuel, water, electricity, transportation and all other items necessary for, and incidental to, complete construction of the work, and shall do all things required by the contract documents.
- 1.02 Contractor shall procure all permits and licenses and pay all charges and fees in connection there-with, and shall give all notices, necessary for, and incidental to, lawful prosecution of the work.
- 1.03 The General Conditions apply equally to all classifications of work.

ARTICLE 2 DEFINITIONS

- 2.01 City refers to the City of West Lafayette, Indiana.
- 2.02 Contractor is identified in the written agreement.
- 2.03 Subcontractor is a person, firm or corporation undertaking a portion of the work by virtue of an agreement with the Contractor. A subcontractor bears no contractual relationship to the City and under the City-Contractor agreement is deemed an employee of the Contractor.
- 2.04 Engineer refers to the City Engineer of the City of West Lafayette, Indiana.
- 2.05 Plans refer to the approved drawings, profiles, sections, details and notations issued by the City as the basis for bidding and for construction of the project.
- 2.06 Specifications the written directions, provisions, requirements and instructions, together with all material incorporated therein by reference, pertaining to the work and issued by the City as supplemental to the plans.
- 2.07 Working Drawings refer to data sheets, shop and setting drawings, erection drawings, false work drawings, coffer dam plans, bending diagrams for reinforcing steel, and supplemental plans and that which the Contractor is required to submit to the Engineer for approval.
- 2.08 Contract Documents include the written agreement between the City and the Contractor together with all Modification Agreements, the plans and specifications together with all addenda, the Contractor's bid, performance bond and certificate of insurance, the Advertisement for Bids, the Instruction to Bidders, these General Conditions, the Special Conditions, and the working drawings.
- 2.09 Project refers to the improvements which are the subject to the contract documents.

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- 2.10 Site is the field location of the project.
- 2.11 Work includes all performance required of the Contractor under the Contract Documents. It also includes all materials, labor, tools, equipment, services, fuel, water, electricity, transportation, apparatus, controls, services, and related items which are necessary, or are customarily furnished, for proper and complete construction, erection and installation of materials, equipment and systems.
- 2.12 Extra Work includes any work by the Contractor in addition to that required by the Contract Documents, when secured by a written Modification Agreement executed by the City and by the Contractor.
- 2.13 Addendum (plural Addenda) is a correction of, addition to, modification of, or clarification of the plans and specifications, and is issued by the Engineer prior to the time set for receiving bids.
- 2.14 Modification Agreement is a written pact between the City and the Contractor, pertaining to the project, and entered subsequently to the signing of the contract.
- 2.15 Approved or Approval refers to an act of the Engineer unless the wording in context refers specifically to another.
- 2.16 Or Equal or Equal To refers to favorable comparison to a specific standard and is by decision of the Engineer.
- 2.17 Graphic Symbols are as defined, or indicated by notation, on the plans and working drawings.
- 2.18 Any technical term or abbreviation which is not defined in the contract documents shall be construed according to its usage in the edition of Indiana Department of Transportation Standard Specification current at the time of signing of the contract.

ARTICLE 3 CODES AND ORDINANCES

- 3.01 The following codes and standards insofar as they pertain to field construction shall govern the work, except that in any case of conflict with the General Conditions or with the plans and specifications said General Conditions and plans and specifications shall govern:
- A. Edition of the Indiana Dept. of Transportation Standard Specifications current at the time of signing the bids, except that the work "Dept." as used therein shall be changed to "City"
 - B. The edition of the American Concrete Institute Code current at the time of signing the

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bids

- C. The edition of the American Institute of Steel Construction Code current at the time of signing of the bids
- D. Rules and regulations of the Dept. of Fire & Building Services, the State Board of Health of Indiana, and the State Fire Marshal
- E. Codes and Ordinances of the City of West Lafayette, Indiana
- F. Laws of the United States and statutes of Indiana

ARTICLE 4 COORDINATION

- 4.01 The Contractor shall give not less than 72 hours advance notice to the Police Department, the Fire Department and emergency ambulance services before blocking off of any traffic lane, and shall notify said departments when such blockage is removed.
- 4.02 Contractor shall not permit drainage of surface water, storm runoff water, or water standing in any pond or excavation, into any sewer before completion of the project and shall bear all costs of damages to the sewer and to properties connected to such sewer should such drainage into a sewer occur.

ARTICLE 5 PLANS AND SPECIFICATIONS

- 5.01 It is the intent of the plans and specifications that each compliments the other in describing the work. What is called for by one shall be as binding as if called for by both.
- 5.02 It is the intent of the plans and specifications that items which, in the knowledge of craftsmen skilled in the trade, or which are generally known to be necessary to the adequacy or function of the finished project, or which are made mandatory by code, ordinance or statute and are, therefore, included by reference to such code, ordinance or statute, shall be furnished and installed without extra charge even though not specifically mentioned in the contract documents.
- 5.03 In event of discrepancy between the documents the Engineer's interpretation, delivered in writing, shall be a condition precedent to litigation.
- 5.04 Plans and specifications are prepared in such manner as to facilitate the letting of separate contracts. In each separate contract with the City the word "contractor" shall be used as herein defined: in no case shall it be construed as referring to a subcontractor.

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ARTICLE 6 SEVERANCE

- 6.01 The contract is deemed several in the sense that voidance of any part or portion shall not void the remainder. It is deemed entire in the sense that the intent is to establish one price for the doing of the whole work; partial payments are not allocated absolutely to certain parts of the work but are made for the mutual convenience of the Contractor and the City. Partial payment shall not be construed as final acceptance of work done or of any material incorporated into the construction.

ARTICLE 7 CLASSIFICATIONS OF CONSTRUCTION, SEPARATE CONTRACTS

- 7.01 The City shall have the right to engage separate contractors for different classifications of construction, and at any time during the construction period, or thereafter, to engage others for work pertaining to construction or occupancy and not already under contract, and each shall have right of access to the project.
- 7.02 It shall be the duty of each contractor to coordinate his work with that of others, and to place his work in such manner that no extra work or extra expense is placed upon others. Each shall do such cutting and patching as is necessary to receive his work, and shall patch, or integrate into the construction, such cutting to the satisfaction of the City, and shall bear full guarantee responsibility for his cutting and patching of the work of others. Each contractor shall be responsible for excavating to receive his own work and for backfilling such excavation to the standards of the construction specifications.
- 7.03 Where the work of two (2) or more contractors is interdependent for final function, and such final function is impaired by reason of failure of coordination between contractors, the entire cost of correction shall be borne by the contractor responsible. The Engineer shall decide such issues and his written decision shall be a condition precedent to litigation.
- 7.04 Where damage to the project or any of its component parts occurs in consequence of defective materials or workmanship, or of defective or malfunctioning part or mechanism, the contractor responsible for the initial installation of such material, workmanship, part of mechanism shall bear all costs of repair of such damage. The Engineer shall decide such issues and his written decision shall be a condition precedent to litigation.

ARTICLE 8 BOND, INSURANCE, LEGAL RESPONSIBILITY, AND PUBLIC SAFETY

- 8.01 The Contractor shall furnish to the City an acceptable performance and payment bond in the amount of one hundred percent (100%) of the contract price including

subsequent modifications of work and contract price. Said bond shall secure the Contractor's performance, and payment of labor, materials, subcontractors, supplies and any furnishing service. Bid bond shall be written by a surety authorized to do business in the State of Indiana and who maintains at least one (1) established place of business, in the State and in a location of which the continuance is not dependent upon decision of individual personnel of the Surety within the State.

8.02 The City of West Lafayette's risk management strategy requires the contractor provide us with evidence of insurance that meets the minimum requirements listed below for this project. This coverage must be placed with an insurance company with an A.M. Best rating of A:VII or better. Please provide a Waiver of Subrogation in favor of the City of West Lafayette, Indiana as it pertains to Commercial General Liability, Workers Compensation, and Automobile Liability.

8.03 Insurance Requirements:

(a) Commercial General Liability (Occurrence Form)

Each Occurrence	\$1,000,000
Products/Completed Operations Aggregate	\$2,000,000
General Aggregate	\$2,000,000
(other than Prod/Comp Ops Liability)	
Personal & Advertising Injury Liability	\$1,000,000

Coverage shall be subject to a per project or vendor general aggregate provision that names all jobs performed by subcontractor if applicable. The City of West Lafayette, Indiana must be named as an Additional Insured per ISO forms CG2010 and CG2037 or their equivalent. This insurance will stay in effect for a period of three (3) years after acceptance of work. The insurance will be considered primary and noncontributory before any other applicable coverage. Include Waiver of Subrogation in favor of the City of West Lafayette, Indiana.

(b) Automobile Liability

\$1,000,000 each accident

If subcontractor at any time transports hazardous materials, subcontractor shall carry appropriate auto pollution coverage. Hired and Non-Owned auto liability coverage is to be included. The insurance will be considered primary and noncontributory before any other applicable coverage. Include Waiver of Subrogation in favor of the City of West Lafayette, Indiana.

(c) Workers Compensation and Employer's Liability

Worker's Compensation	State Statutory Limits
Employer's Liability	
Bodily Injury by Accident	\$1,000,000 each accident
Bodily Injury by Disease	\$1,000,000 policy limit
Bodily Injury by Disease	\$1,000,000 each employee

Include Waiver of Subrogation in favor of the City of West Lafayette, Indiana.

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(d) Umbrella Liability

Each Occurrence and Aggregate

\$1,000,000

(e) Professional Liability (Applicable for Professional Services only rendered to the City) All subcontractors performing design, engineering, surveying, testing, or other professional services shall carry professional liability (errors and omissions) insurance. This policy shall provide at least \$1,000,000 for each occurrence and \$2,000,000 aggregate.

- 8.04 The Contractor shall secure, and maintain throughout the life of this contract, such insurance as will protect himself, the City and the Engineer from claims for bodily injury, death or property damage, arising from the Contractor's operations under the contract documents. Policies shall include the standard rider for coverage under Paragraph 8.03 of Article 8 of these General Conditions. Each policy shall contain a clause providing that such policy shall not be canceled by the insurer until after 30 days written notice, to the City, of intent to cancel. The Contractor shall not commence construction, or any operation pertaining thereto, until he has obtained all insurance required by this paragraph and shall have filed with the City either the insurer's certificate of such insurance or certified copies of the policies.
- 8.05 Indemnity: The Contractor shall indemnify and save harmless the City and agents and employees of the City, and the Engineer and agents and employees of the Engineer, from and against as allowed by law every loss and expense incurred by the City and agents and employees of the City and the Engineer and agents and employees of the Engineer, these and any of them, on account of claim, demand, payment, suit, action, judgment or recovery occurring by reason of, or out of, the work. Said indemnity shall be in the full amount of recovery had against the City and agents or employees of the City and the Engineer and agents and employees of the Engineer, these and any of them, plus such expense as may be incurred in determining and defending against such action, and plus legal fees of Defense Counsel.
- 8.06 Patents and Royalties: If the Contractor uses any design, device, material, method or process covered by patent or copyright he shall provide for such use by legal agreement with the holder of the patent or copyright and shall pay all fees and charges pertaining thereto.

ARTICLE 9 USE OF SITE

- 9.01 The Contractor bears full responsibility for prevention of injury to or destruction of streets, roads, pavements, drives, curbs, parking areas, ponds, graded areas, walkways, fences, signs, plantings and beddings, trees and shrubbery, grass, walls, buildings, structures, wires, poles, guys, foundations, conduits, pipes, mains, sewers, and all appurtenances, apparatus and construction pertaining thereto, and all items of existing construction of whatsoever nature, and shall bear all costs of satisfactory

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repair, replacement or restitution without additional compensation from the City.

ARTICLE 10 MATERIALS AND TESTING

- 10.01 Only materials approved by the Engineer as conforming to the plans and specifications shall be used in construction. Approval of a source shall not constitute acceptance of all materials from that source.
- 10.02 The Contractor shall provide such facilities as the Engineer may require for collecting and forwarding of samples. All samples shall be furnished by the Contractor without charge.

ARTICLE 11 WORKMANSHIP

- 11.01 Workmanship shall be to the best quality of each trade involved.

ARTICLE 12 PROSECUTION AND PROGRESS

- 12.01 Construction shall start within the ten (10) calendar days following consecutively after the Engineer's issuance of the notice to proceed, or as soon after said ten (10) days as weather and site conditions shall permit.
- 12.02 Should the Contractor fail to deploy at the site during normal working hours sufficient labor, equipment and materials to take full advantage of permissive weather and site conditions, or shall perform construction unsuitable or in a reckless or irresponsible manner, or shall neglect or refuse to remove unsuitable construction and replace same with approved construction, or shall discontinue all or any part of construction before completion without approval of the Engineer, or shall fail to pay bills pertaining to the work, or shall become unable adequately to finance the work, the following rights shall accrue to the City:
- A. The right to refuse further payment as long as the Contractor's delinquency shall exist, and
 - B. The right to notify the Contractor or Surety, or both, that such delinquency exists and to specify what action shall be taken by the Contractor or Surety, or both. If the Contractor or Surety shall not, within the fourteen (14) calendar days following consecutively after the day of such notice, proceed in accordance therewith, and thereafter continue diligently in accordance therewith, the City shall have the right to take all or any part of the work out of the Contractor's hands. The City shall then have the option of employing others to finish such work or of turning such work over to the Surety for completion. All costs, legal fees and engineering fees thereby incurred by the City shall be deducted from the unpaid balance of the contract price, and, if such unpaid balance is insufficient or non-existent, shall lie against the bond.

- C. The rights stated under (a) and (b) above are not mutually exclusive. The City may exercise any or all of said rights, or may exercise the rights stated under (a) and, at a later date exercise the rights under (b).
- D. The Contractor shall have no additional compensation on account of the City's exercise of rights under (a) and (b) above.

ARTICLE 13 CONTRACTOR'S PROCEDURES AND METHODS

- 13.01 The Contractor is an independent contractor. Construction procedures and methods are at Contractor's option, subject only to quality of materials used and that the finished construction meet the standards of the plans and specifications.
- 13.02 Neither the City nor the Engineer shall be deemed responsible for construction methods or procedures used by the Contractor, nor for the adequacy of safety of construction methods or procedures used by the Contractor.

ARTICLE 14 ACCEPTANCE OF CONSTRUCTION

- 14.01 It is the intent of the contract documents to provide for a completed project. It is the intent of the contract documents that one (1) price be established for the doing of the whole work. The Contractor is an independent contractor, responsible for constructing and turning over to the City the project completed and in accordance with plans and specifications.
- 14.02 No action of the City, its officials, or its agents or employees, and no action of the Engineer or any agent or employee of the Engineer, shall constitute final acceptance of portions or parts of the project, or of workmanship of a portion or part, or of a material installed.
- 14.03 Upon completion of the project the Contractor shall so notify the Engineer. The Board of Public Works and Safety of the City of West Lafayette, Indiana, shall then inspect the project and furnish to the Contractor a written list of exceptions, if any. When such exceptions, if any, have been corrected by the Contractor, construction shall be deemed complete. The Board shall then furnish to the Contractor a written acceptance of the project.

ARTICLE 15 EXTRA WORK

- 15.01 All modification agreements shall be in writing.

ARTICLE 16 PAYMENT

- 16.01 Partial payments will be made, subject to restrictions stated elsewhere in these General Conditions, in such manner that the total of such payments shall at no time prior to final payment exceed ninety percent (90%) of the Contractor's investment in the work or of the contract price, whichever is the smaller.
- 16.02 Such payments shall be due and payable on or before the tenth (10th) day of each calendar month on application submitted on or before the first (1st) day of such month.
- 16.03 Each request for payment shall be supported by an itemized statement listing the following:
- A. Original contract price
 - B. Modification agreement prices
 - C. Current contract price
 - D. Total cumulative value of work done
 - E. Deduction of ten percent (10%) of such total cumulative value
 - F. Net amount earned
 - G. Deduction of previous payments
 - H. Amount of payment to be made
- 16.04 Each request shall be supported by the certificate of the Engineer.
- 16.05 Ten percent (10%) of the contract price including extras and credits, shall be withheld during the sixty (60) calendar days following consecutively after the date of acceptance of the project and shall be due and payable on the sixty first (61st) day. The Board of Public Works and Safety may, at its discretion, waive the sixty (60) day withholding period upon Contractor's submittal of evidence of payment of all claims pertaining to the work, or submittal of waivers of lien executed by creditors.
- 16.06 The City shall have the right to withhold from amounts due the Contractor sufficient sums to pay all labor, subcontractors, materials suppliers and those furnishing services, and such amounts as the City may deem necessary to protect its interest on account of:
- A. defective work;
 - B. claim filed or reasonable evidence of a claim to be filed;
 - C. failure of the Contractor to make payments properly to labor, subcontractors, materials suppliers and others in interest;
 - D. a reasonable doubt that the work can be completed for the unpaid balance; and
 - E. failure, or refusal, of the Contractor to expedite the work in compliance with the contract documents.

ARTICLE 17 ASSIGNMENT

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- 17.01 The Contractor shall not assign the contract or monies due under the contract without written consent of the City.

ARTICLE 18 USE OF SUBCONTRACTORS

- 18.01 The Contractor shall have the right to employ subcontractors for a reasonable amount of the work, and his selection of individual subcontractors shall not be subject to review by, or approval of, the City.
- 18.02 No contractual relationship, pertaining to the work, shall exist between the City and any subcontractor. No act of supervision or inspection, or any approval or acceptance given, shall be taken as implying a contractual relationship between the City and any subcontractor. A subcontractor is to be deemed an employee of the Contractor. The Contractor shall bear full responsibility for the actions of subcontractors, the same as for other employees of the Contractor.

ARTICLE 19 DISCIPLINE

- 19.01 The Engineer shall have the right to require removal from the project of employees of the Contractor for overt incompetence, recklessness, negligence, damage to work, or for language, habits, manners or acts offensive to the community.
- 19.02 No intoxicating beverages shall be permitted on the site. The Engineer shall have the right to require dismissal of any employee appearing to be under the influence of alcohol.

ARTICLE 20 CLAIMS FOR EXTRA WORK

- 20.01 No claim for extra compensation shall be allowed where based upon failure of the Contractor to understand the plans and specifications, nor upon failure of the Contractor to discover work noted upon the plans or in the specifications.
- 20.02 No claim for extra compensation shall be allowed where based upon an oral agreement. All agreements shall be in writing and signed by all parties to the contract.

ARTICLE 21 DISCHARGE OF CONTRACT

- 21.01 The contract shall be considered as discharged when each and every one of the following conditions have been met:
- A. All construction has been completed and has been accepted by the City.
 - B. Payment in full has been made.
 - C. The guarantee period has expired and no exceptions, given to the Contractor in

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- writing prior to the expiration of the guarantee period, remain uncorrected.
- D. The provisions of Article 8, Paragraph 8.03 are met either by judgment or settlement or by an applicable statute of limitations.

ARTICLE 22 EXISTING FACILITIES

- 22.01 Wherever the contract documents require connection to, interception of, revision of, or alterations of any existing facility it shall be the duty of the Contractor to uncover such points of connection, interception, revision or alteration before commencing construction related thereto or dependent thereon and to verify the size, location, dimension, elevation and gradient of such existing facility. The Contractor shall notify the Engineer of such findings and, if a discrepancy is found between actual and anticipated conditions, shall not commence related construction until instructions are received from the Engineer and the contract price adjustment, if any, has been agreed to in writing.
- 22.02 Should the Contractor fail to comply with the above provision, and all or any part of the project be impaired by reason of a discrepancy between actual and anticipated conditions, the Contractor shall bear the entire expense of correction and shall receive no compensation thereof.

ARTICLE 23 OPEN COMPETITION

- 23.01 Where in the plans and specifications certain materials, trade names, catalog numbers or articles of certain manufacture are mentioned it is done for the purpose of establishing standards of quality, performance, durability and efficiency and is not to be construed as limiting competition. Other name materials may be used if in the opinion of the Engineer they are equal in quality, performance, durability and efficiency to those mentioned, and are of a design in harmony with the work as outlined, and the Engineer gives written approval of a substitution before such articles are ordered by the Contractor.

ARTICLE 24 GUARANTEE

- 24.01 The Contractor shall guarantee against defects in materials and workmanship for a period of one (1) year commencing with the date of final acceptance of the finished project by the West Lafayette Board of Works and Public Safety. The Contractor shall satisfactorily repair or replace any and all defective materials, whether because of the material or the workmanship of installing it, and shall satisfactorily repair or replace any and all defective or malfunctioning parts and mechanisms, all without cost to the City, during the guarantee period. Contractor shall bear all costs of satisfactorily repairing damage to the project, its component parts, and to property, where such damage is a direct result of defective materials or workmanship or of any defective or

malfunctioning part of mechanism installed by the Contractor.

- 24.02 This guarantee shall be secured by a one (1) year extension of the Contractor's performance bond. The guarantee is a part of the contract and is not to be in a separate writing.

ARTICLE 25 NON-DISCRIMINATION

- 25.01 The Contractor shall, in hiring, comply with the Federal and State statutes and regulations pertaining to nondiscrimination in hiring, and in hiring shall not discriminate on account of race, creed or color.

END OF SECTION

SECTION 00800

SUPPLEMENTARY CONDITIONS

2016 CITY HALL DEMOLITION PROJECT

1. The following shall be added to Article 24 of the General Conditions:

24.03 Milling and resurfacing work shall be guaranteed in accordance with article 24.01 and the bonding requirements of 24.02.

24.04 All other work not described in 24.03 shall carry a three (3) year guarantee against damage. If damage shall occur within this window, the engineer will determine whether it is considered normal wear. If the damage is not classified as normal wear, the contractor will be responsible to replace it, at no cost to the city, within a specified time period decided upon by the engineer.

Warranty Bond: Contractor shall, as a condition to the Owner's obligation to make final payment, supply a three (3) year Warranty Bond executed by a surety meeting the qualifications set forth in Article 8, beginning on the date of Substantial Completion in an amount equal to ten percent (10%) of the Contract amount as adjusted for Change Orders.

2. Material testing will include compaction testing on all backfill to verify that a 95% compaction rate of the material has been achieved. There is no direct payment for this item; the cost for this item shall be included in the cost for other related items. The contractor is responsible for contacting the testing contractor and coordinating the testing schedules.
3. All commercial drive approaches shall have a minimum 10'-0" radii on both sides unless otherwise instructed by Engineer. Residential drive approaches, unless otherwise directed by Engineer, shall be constructed with the flared wing taper typically extending at a 45° angle across the planting strip area. Maximum width of taper shall not exceed 5 feet.
4. **Exact set up of each universal access ramp shall be determined in the field by the Contractor and Engineer.**
5. Any street that is having curbs replaced and is not being resurfaced will need to have an 18" patch of asphalt surface, measured from the front edge of the gutter. Anything not excavated in the 18" width shall be milled 1.5" to allow for a clean edge on the patch.
6. The city reserves the right to make at anytime during the work such changes in quantities or such alterations in the work as are necessary to satisfactorily complete the project. Changes in work shall be in accordance with INDOT Standard Specifications Section 104.

7. Pavement markings shall be replaced in-kind in accordance with INDOT Standard Specifications Section 108. All markings shall be paint in accordance with INDOT Standard Specifications Section 921. Contractor shall provide owner with plan for marking replacement for review and approval. Pavement marking replacement shall not be measured and will be paid for as "Pavement Marking Replacement," as a lump sum.

END OF SECTION

EXHIBIT A

CONSTRUCTION DRAWINGS

2016 CITY HALL DEMOLITION PROJECT

See attached bid set.

TECHNICAL SPECIFICATIONS

**Specifications will follow the latest edition of Indiana Department of Transportation Standard Specifications with Supplements, unless otherwise noted. Where conflicts occur between the INDOT Standard Specifications and these Contract Documents, the Contract Documents shall govern.*

SECTION 100 – GENERAL PROVISIONS

SECTION 101 – DEFINITIONS AND TERMS

- 101.10 CONSTRUCTION LIMITS: Prior to beginning work at each location in the program, the Contractor shall verify the exact limits of construction with the Engineer.

In general, the overlay limits shall be between the front of each gutter or face of each curb, as directed. At intersecting streets and each end of the street being resurfaced, a lapped butt joint will be constructed. The limits of the joint area have been depicted on the details in Exhibit B, however, exact limits shall be determined and approved in the field.

SECTION 103 – AWARD AND EXECUTION OF CONTRACT

- 103.04 INSURANCE: Refer to Article 8 of the General Conditions for insurance requirements.

- 103.06 WAGE AND LABOR REQUIREMENTS: The following requirements shall apply for all contractors performing work on public works contracts for the City of West Lafayette, Indiana:

1. PREVAILING PARTY – ATTORNEY FEES: Notwithstanding any term or condition in this Contract to the contrary, in the event litigation is commenced to enforce any term or condition of this Contract, the prevailing party shall be entitled to costs and expenses of litigation including a reasonable attorney fee.
2. ENGAGING IN ACTIVITIES WITH IRAN: By signing this Contract, Contractor certifies that it is not engaged in investment activities in the country of Iran as set forth in I.C. 5-22-16.5.
3. E-VERIFY: Contractor shall comply with E-Verify Program as follows:
 - f. Pursuant to IC 22-5-1.7, Contractor shall enroll in and verify the work eligibility status of all newly hired employees of Contractor through the E-Verify Program (“Program”). Contractor is not required to verify the work eligibility status of all newly hired employees through the Program if the Program no longer exists.
 - g. Contractor and its subcontractors shall not knowingly employ or contract with an unauthorized alien or retain an employee or contract with a person that

Contractor or its subcontractors subsequently learns is an unauthorized alien. If Contractor violates this Section 7(b), the City shall require Contractor to remedy the violation not later than thirty (30) days after the City notifies Contractor. If Contractor fails to remedy the violation within the thirty (30) day period, the City shall terminate the contract for breach of contract. If the City terminates the contract, Contractor shall, in addition to any other contractual remedies, be liable to the City for actual damages. There is a rebuttable presumption that Contractor did not knowingly employ an unauthorized alien if Contractor verified the work eligibility status of the employee through the Program.

h. If Contractor employs or contracts with an unauthorized alien but the City determines that terminating the contract would be detrimental to the public interest or public property, the City may allow the contract to remain in effect until the City procures a new contractor.

i. Contractor shall, prior to performing any work, require each subcontractor to certify to Contractor that the subcontractor does not knowingly employ or contract with an unauthorized alien and has enrolled in the Program. Contractor shall maintain on file a certification from each subcontractor throughout the duration of the Project. If Contractor determines that a subcontractor is in violation of this Section 7(d), Contractor may terminate its contract with the subcontractor for such violation. Such termination may not be considered a breach of contract by Contractor or the subcontractor.

j. By its signature below, Contractor swears or affirms that it i) has enrolled and is participating in the E-Verify program, ii) has provided documentation to the City that it has enrolled and is participating in the E-Verify program, and iii) does not knowingly employ an unauthorized alien.

4. NON-DISCRIMINATION: Contractor agrees:

c. That in the hiring of employees for the performance of work under this contract or any subcontract hereunder, no contractor, or subcontractor, nor any person acting on behalf of such contractor or subcontractor, shall, by reason of race, religion, color, sex, national origin or ancestry, discriminate against any citizen of the State of Indiana who is qualified and available to perform the work to which the employment relates;

d. That no contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, religion, color, sex, national origin or ancestry;

c. That the City may deduct from the amount payable to the contractor a penalty of five dollars (\$5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of

the contract;

d. If there is a second or any subsequent violation of the terms or conditions of this section, then this contract may be cancelled or terminated by City and all money due or to become due hereunder will be forfeited.

To cancel, terminate, or suspend the contract in whole or in part; and/or to declare the Contractor ineligible for further City contracts.

5. AFFIDAVITS AND PAYROLLS: The affidavit form provided in a non-collusion affidavit must be properly executed.

SECTION 104 – SCOPE OF WORK

104.04 MAINTENANCE OF TRAFFIC: The contractor will be responsible for adequate maintenance of traffic measures throughout construction operations. All barrels, cones, barricades, flagmen, and other associated items shall be provided to protect the workmen and the public. The contractor shall provide adequate means to safely direct traffic past the point of construction, and shall provide for safely conducting traffic at all other points that are affected by the work, at all times. Upon the request of the City, the contractor shall provide a traffic maintenance plan for engineering approval. The contractor also needs to coordinate maintenance of traffic with INDOT for work in and around state roads.

No closures shall be allowed, unless specifically coordinated and approved. Access to all property shall be maintained, and any times where there is a loss of access, the contractor shall coordinate with the property owner and/or occupant(s). When requested by the City, the contractor will provide adequate notification to the media and any property owners prior to commencing work in a given area.

No payment will be made for the maintenance of traffic. The cost of this work should be included in the various other associated pay items.

SECTION 105 – CONTROL OF WORK

105.10 INSPECTION OF WORK: The contractor is responsible to contact the City for the following inspections:

- (a) Demolition evaluation – prior to building demolition
- (b) Final – after removal of all demolished materials, disturbed area has been backfilled, compacted, and seeded/sodded

SECTION 107 – LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

- 107.08 PUBLIC CONVENIENCE AND SAFETY: The contractor shall coordinate all work with the West Lafayette Police and Fire Departments, and shall notify both departments whenever any street or access to any property is to be closed off and when any street is re-opened.

The contractor shall be responsible for all proper public safety provisions for the construction site and any machinery or equipment whether in operation or not as well as work zones. No work site(s) shall be left unprotected at any time.

No work site(s) shall be left unprotected at any time. The public shall be protected from inadvertently entering a worksite by appropriate means such as cones, barrels, barricades, fencing, warning lights, arrow boards, flagmen, etc.

The contractor shall bring a traffic safety plan to the pre-construction meeting. The contractor must follow all procedures set forth in the Indiana Manual on Uniform Traffic Control Devices, 2008 Edition for Streets and Highways, under Part 6 Temporary Traffic Control, with emphasis on Chapter 6D: Pedestrian and Worker Safety.

- 107.14 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE: Contractor shall protect existing trees in a five foot (5') length to all sides of the trunk. This area is to be kept clear of project equipment, project materials, waste, and excess soil. Minimal digging, trenching, compaction or other soil disturbance is allowed in this area (as determined by the Engineer).

SECTION 108 – PROSECUTION AND PROGRESS

- 108.04 PROSECUTION OF THE WORK: The contractor shall coordinate all work with the City Engineer or designated representative prior to commencing and throughout the contract on at least a daily basis. All material tickets shall be promptly turned in at the end of each day of work for record keeping and basis of payment. Failure to report any material tickets shall result in denial of payment claims by the City. Once work on a street has begun, the contractor has five working days, weather permitting, to finish the work.

See attached specifications:

Section 015639 – Temporary Tree and Plant Protection

Section 017419 – Construction Waste Management and Disposal

Section 024116 – Structure Demolition

Section 311000 – Site Clearing

Section 312000 – Earth Moving

Section 312319 – Dewatering

Section 321216 – Asphalt Paving

END OF SECTION

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Sections:
 - 1. Section 015000 "Temporary Facilities and Controls" for temporary site fencing.
 - 2. Section 311000 "Site Clearing" for removing existing trees and shrubs.

1.3 DEFINITIONS

- A. Caliper: Diameter of a trunk measured by a diameter tape at 6 inches above the ground for trees up to, and including, 4-inch size; and 12 inches above the ground for trees larger than 4-inch size.
- B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type of the following:
 - 1. Protection-Zone Fencing: Assembled Samples of manufacturer's standard size made from full-size components.
 - 2. Protection-Zone Signage: Full-size Samples of each size and text, ready for installation.
- C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified arborist and tree service firm.
- B. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
- D. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
 1. Use sufficiently detailed photographs or videotape.
 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.6 QUALITY ASSURANCE

- A. Arborist Qualifications: Licensed arborist in jurisdiction where Project is located.
- B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

1.7 PROJECT CONDITIONS

- A. The following practices are prohibited within protection zones:
 1. Storage of construction materials, debris, or excavated material.
 2. Parking vehicles or equipment.
 3. Foot traffic.
 4. Erection of sheds or structures.
 5. Impoundment of water.
 6. Excavation or other digging unless otherwise indicated.
 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Do not direct vehicle or equipment exhaust toward protection zones.

- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil: Natural or cultivated top layer of the soil profile or manufactured topsoil; containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch in diameter; and free of weeds, roots, and toxic and other nonsoil materials.
 - 1. Obtain topsoil only from well-drained sites where topsoil is 4 inches deep or more; do not obtain from bogs or marshes.
- B. Topsoil: Imported or manufactured topsoil complying with ASTM D 5268.
- C. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
 - 1. Type: Shredded hardwood.
 - 2. Size Range: 3 inches maximum, 1/2 inch minimum.
 - 3. Color: Natural.
- D. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements.
 - 1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 3.5" x 1.5" opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart.
 - a. Height: 4 feet.
 - b. Color: High-visibility orange, nonfading.
- E. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:
 - 1. Size and Text: As shown on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. For the record, prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Flag each tree trunk at 54 inches above the ground.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- C. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated.
 - 1. Apply 5-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.

3.3 TREE- AND PLANT-PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected area. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
 - 1. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Owner.
- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Owner. Install one sign spaced approximately every 50 feet on protection-zone fencing.
- C. Maintain protection zones free of weeds and trash.
- D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Owner.
- E. Maintain protection-zone fencing and signage in good condition as acceptable to Owner and remove when construction operations are complete and equipment has been removed from the site.

1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving."
- B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.
- C. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.
- D. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

- A. Prune roots that are affected by temporary and permanent construction. Prune roots as follows:
 1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
 2. Cut Ends: Coat cut ends of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other coating formulated for use on damaged plant tissues and that is acceptable to arborist.
 3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
 4. Cover exposed roots with burlap and water regularly.
 5. Backfill as soon as possible according to requirements in Section 312000 "Earth Moving."
- B. Root Pruning at Edge of Protection Zone: Prune roots 12 inches outside of the protection zone, by cleanly cutting all roots to the depth of the required excavation.
- C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

3.6 CROWN PRUNING

- A. Prune branches that are affected by temporary and permanent construction. Prune branches as follows:
 - 1. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.
 - 2. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
 - 3. Cut branches with sharp pruning instruments; do not break or chop.
 - 4. Do not apply pruning paint to wounds.
- B. Chip removed branches and dispose of off-site.

3.7 REGRADING

- A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.
 - 1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.
- C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- D. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.8 FIELD QUALITY CONTROL

- A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.9 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Owner.
 - 1. Submit details of proposed root cutting and tree and shrub repairs.
 - 2. Have arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.
 - 3. Treat damaged trunks, limbs, and roots according to arborist's written instructions.
 - 4. Perform repairs within 24 hours.

5. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Owner.
- B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition or are damaged during construction operations that Owner determines are incapable of restoring to normal growth pattern.
 1. Provide new trees of same size and species as those being replaced for each tree that measures 6 inches or smaller in caliper size.
 2. Provide one new tree(s) of 6-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.
 - a. Species: Species selected by Owner.
 3. Plant and maintain new trees as specified in Section 329300 "Plants."
- C. Soil Aeration: Where directed by Owner, aerate surface soil compacted during construction. Aerate 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch-diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and sand.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 015639

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Recycling nonhazardous demolition and construction waste.
 - 3. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
 - 1. Section 024116 "Structure Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.
 - 2. Section 024119 "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.
 - 3. Section 311000 "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:

1. Demolition Waste:

- a. Asphalt paving.
- b. Concrete.
- c. Concrete reinforcing steel.
- d. Brick.
- e. Concrete masonry units.
- f. Wood studs.
- g. Wood joists.
- h. Plywood and oriented strand board.
- i. Wood paneling.
- j. Wood trim.
- k. Structural and miscellaneous steel.
- l. Rough hardware.
- m. Roofing.
- n. Insulation.
- o. Doors and frames.
- p. Door hardware.
- q. Windows.
- r. Glazing.
- s. Metal studs.
- t. Gypsum board.
- u. Acoustical tile and panels.
- v. Carpet.
- w. Carpet pad.
- x. Demountable partitions.
- y. Equipment.
- z. Cabinets.
- aa. Plumbing fixtures.
- bb. Piping.
- cc. Supports and hangers.
- dd. Valves.
- ee. Sprinklers.
- ff. Mechanical equipment.
- gg. Refrigerants.
- hh. Electrical conduit.
- ii. Copper wiring.
- jj. Lighting fixtures.
- kk. Lamps.
- ll. Ballasts.
- mm. Electrical devices.
- nn. Switchgear and panelboards.
- oo. Transformers.

2. Construction Waste:

- a. Masonry and CMU.
- b. Lumber.
- c. Wood sheet materials.
- d. Wood trim.
- e. Metals.
- f. Roofing.
- g. Insulation.
- h. Carpet and pad.
- i. Gypsum board.
- j. Piping.
- k. Electrical conduit.
- l. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates.
 - 7) Plastic pails.

1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the Work.

1.6 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
1. Material category.
 2. Generation point of waste.
 3. Total quantity of waste in tons.
 4. Quantity of waste salvaged, both estimated and actual in tons.
 5. Quantity of waste recycled, both estimated and actual in tons.
 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements, that employs a LEED-Accredited Professional, certified by the USGBC, as waste management coordinator.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan including responsibilities of waste management coordinator.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - 5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification and waste reduction work plan. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

- B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - 2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.
- E. Waste Management in Historic Zones or Areas: Hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by 12 inches or more.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area designated by Owner.
 - 5. Protect items from damage during transport and storage.
- D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- F. Plumbing Fixtures: Separate by type and size.
- G. Lighting Fixtures: Separate lamps by type and protect from breakage.
- H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

- A. Asphalt Paving: Grind asphalt to maximum 1-1/2-inch size.
 - 1. Crush asphaltic concrete paving and screen to comply with requirements in Section 312000 "Earth Moving" for use as general fill.
- B. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.
- C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
 - 1. Pulverize concrete to maximum 1-1/2-inch size.
 - 2. Crush concrete and screen to comply with requirements in Section 312000 "Earth Moving" for use as satisfactory soil for fill or subbase.
- D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
 - 1. Pulverize masonry to maximum 3/4-inch size.

- a. Crush masonry and screen to comply with requirements in Section 312000 "Earth Moving" for use as general fill.
 - b. Crush masonry and screen to comply with requirements in Section 329300 "Plants" for use as mineral mulch.
2. Clean and stack undamaged, whole masonry units on wood pallets.
- E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- F. Metals: Separate metals by type.
 1. Structural Steel: Stack members according to size, type of member, and length.
 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
- H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
- J. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.
- K. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- L. Carpet Tile: Remove debris, trash, and adhesive.
 1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- M. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- N. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 2. Polystyrene Packaging: Separate and bag materials.

3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
 - a. Comply with requirements in Section 329300 "Plants" for use of clean sawdust as organic mulch.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
 - a. Comply with requirements in Section 329300 "Plants" for use of clean ground gypsum board as inorganic soil amendment.

3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.
- D. Disposal: Remove waste materials and dispose of at designated spoil areas on Owner's property.
- E. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 024116 - STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of buildings and site improvements.
 - 2. Removing below-grade construction.
 - 3. Disconnecting, capping or sealing, and removing site utilities.
 - 4. Salvaging items for reuse by Owner.

- B. Related Sections:

- 1. Section 011000 "Summary" for use of the premises and phasing requirements.
 - 2. Section 013200 "Construction Progress Documentation" for preconstruction photographs taken before building demolition.
 - 3. Section 024119 "Selective Demolition" for partial demolition of buildings, structures, and site improvements.
 - 4. Section 311000 "Site Clearing" for site clearing and removal of above- and below-grade site improvements not part of building demolition.
 - 5. Section 330500 "Common Work Results for Utilities" for shutting off, disconnecting, removing, and sealing or capping utilities.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner. Include fasteners or brackets needed for reattachment elsewhere.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified refrigerant recovery technician.
- B. Proposed Protection Measures: Submit informational report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and , for noise control. Indicate proposed locations and construction of barriers.
 1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings.
- C. Schedule of Building Demolition Activities: Indicate the following:
 1. Detailed sequence of demolition work, with starting and ending dates for each activity.
 2. Temporary interruption of utility services.
 3. Shutoff and capping of utility services.
- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before the Work begins.
- F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
- G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.
- D. Predemolition Conference: Conduct conference at Project site.
 1. Inspect and discuss condition of construction to be demolished.
 2. Review structural load limitations of existing structures.

3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review and finalize protection requirements.
5. Review procedures for noise control and dust control.
6. Review procedures for protection of adjacent buildings.
7. Review items to be salvaged and returned to Owner.

1.7 PROJECT CONDITIONS

- A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.
- B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.
 1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
 2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
 - a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for buildings and structures to be demolished.
 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 2. Before building demolition, Owner will remove the following items:
 - a. TBD
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 1. Hazardous materials will be removed by Owner before start of the Work.
 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. On-site storage or sale of removed items or materials is not permitted.

1.8 COORDINATION

- A. Arrange demolition schedule so as not to interfere with operations of adjacent occupied buildings.

PART 2 - PRODUCTS(Not Used)

2.1 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Section 312000 "Earth Moving."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting demolition operations.
- B. Review Project Record Documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations. Comply with Section 013233 "Photographic Documentation."
- D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
 - 1. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
- E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.2 PREPARATION

- A. Refrigerant: Remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction before starting demolition.
- B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
 - 4. Cut off pipe or conduit a minimum of 24 inches below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.

- C. Existing Utilities: See plumbing and electrical Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.
- D. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of demolition.
- E. Salvaged Items: Comply with the following:
 - 1. Clean salvaged items of dirt and demolition debris.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to storage area designated by Owner.
 - 5. Protect items from damage during transport and storage.

3.3 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.
 - 1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 - 2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
 - a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.
- C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated.
 - 1. Protect adjacent buildings and facilities from damage due to demolition activities.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
 - 4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
 - 6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
 - 7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.

- D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.4 DEMOLITION, GENERAL

- A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
 - 2. Maintain fire watch during and for at least 2 hours after flame cutting operations.
 - 3. Maintain adequate ventilation when using cutting torches.
 - 4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Engineering Surveys: During demolition, perform surveys to detect hazards that may result from building demolition activities.
- C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
 - 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- D. Explosives: Use of explosives is not permitted.

3.5 DEMOLITION BY MECHANICAL MEANS

- A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.
- B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.
- C. Salvage: Items to be removed and salvaged are indicated below:

- 1. TBD

- D. Below-Grade Construction: Demolish foundation walls and other below-grade construction.
 - 1. Remove below-grade construction, including basements, foundation walls, and footings, completely.
- E. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.
- F. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.
 - 1. Piping: Disconnect piping at unions, flanges, valves, or fittings.
 - 2. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

3.6 DEMOLITION BY EXPLOSIVES

- A. Explosives: Not permitted.

3.7 SITE RESTORATION

- A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Section 312000 "Earth Moving."
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.8 REPAIRS

- A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction. See Section 017419 "Construction Waste Management and Disposal" for recycling and disposal of demolition waste.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Do not burn demolished materials.

3.10 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.
 - 1. Clean roadways of debris caused by debris transport.

END OF SECTION 024116

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting, capping or sealing, and removing site utilities.
7. Temporary erosion- and sedimentation-control measures.

- B. Related Sections:

1. Section 017419 "Construction Waste Management and Disposal"
2. Section 024116 "Structure Demolition" for demolition of buildings, structures, and site improvements.

1.3 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
- D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
- E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

- F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.
- G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or videotape.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Owner.
- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- D. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

- E. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.
- F. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- I. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain. Flag each tree trunk at 54 inches above the ground.
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. General: Protect trees and plants remaining on-site according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Owner.

3.4 EXISTING UTILITIES

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
 - 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed.
 - 1. Arrange with utility companies to shut off indicated utilities.
 - 2. Owner will arrange to shut off indicated utilities when requested by Contractor.
- C. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- D. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.
- E. Excavate for and remove underground utilities indicated to be removed.
- F. Removal of underground utilities is included in earthwork sections and with applicable fire suppression, plumbing, HVAC, electrical, communications, electronic safety and security and

utilities sections and Section 024116 "Structure Demolition" and Section 024119 "Selective Demolition."

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches below exposed subgrade.
 - 3. Use only hand methods for grubbing within protection zones.
 - 4. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects more than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
 - 1. Limit height of topsoil stockpiles to 72 inches.
 - 2. Do not stockpile topsoil within protection zones.
 - 3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
 - 4. Stockpile surplus topsoil to allow for resspreading deeper topsoil.

3.7 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Excavating and backfilling for buildings and structures.
 - 2. Excavating and backfilling trenches for utilities and pits for buried utility structures.

- B. Related Sections:

- 1. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
 - 2. Section 312319 "Dewatering" for lowering and disposing of ground water during construction.

1.3 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

- 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.

- B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

- E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

- 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Owner. Authorized additional excavation

and replacement material will be paid for according to Contract provisions for changes in the Work.

2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner. Unauthorized excavation, as well as remedial work directed by Owner, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D 1586.

I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

J. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

K. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

L. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of the following manufactured products required:

1. Geotextiles.
2. Controlled low-strength material, including design mixture.
3. Geofoam.
4. Warning tapes.

B. Samples for Verification: For the following products, in sizes indicated below:

1. Geotextile: 12 by 12 inches.
2. Warning Tape: 12 inches long; of each color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D 2487.
2. Laboratory compaction curve according to ASTM D 698.

- C. Seismic survey report from seismic survey agency.
- D. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

1.6 QUALITY ASSURANCE

- A. Blasting: Comply with applicable requirements in NFPA 495, "Explosive Materials Code," and prepare a blasting plan reporting the following:
 - 1. Types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
 - 2. Seismographic monitoring during blasting operations.
- B. Seismic Survey Agency: An independent testing agency, acceptable to authorities having jurisdiction, experienced in seismic surveys and blasting procedures to perform the following services:
 - 1. Report types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
 - 2. Seismographic monitoring during blasting operations.
- C. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.
- D. Preexcavation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Owner.
- C. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.
- D. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified in Section 311000 "Site Clearing," are in place.

- E. Do not commence earth moving operations until plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.
- F. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487 or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

- H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.
- J. Sand: ASTM C 33; fine aggregate.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Grab Tensile Strength: 157 lbf; ASTM D 4632.
 - 3. Sewn Seam Strength: 142 lbf; ASTM D 4632.
 - 4. Tear Strength: 56 lbf; ASTM D 4533.
 - 5. Puncture Strength: 56 lbf; ASTM D 4833.
 - 6. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
 - 7. Permittivity: 0.5 per second, minimum; ASTM D 4491.
 - 8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Grab Tensile Strength: 247 lbf; ASTM D 4632.
 - 3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
 - 4. Tear Strength: 90 lbf; ASTM D 4533.
 - 5. Puncture Strength: 90 lbf; ASTM D 4833.
 - 6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
 - 7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
 - 8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.3 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.
- B. Explosives: Obtain written permission from authorities having jurisdiction before bringing explosives to Project site or using explosives on Project site.
 1. Perform blasting without damaging adjacent structures, property, or site improvements.
 2. Perform blasting without weakening the bearing capacity of rock subgrade and with the least-practicable disturbance to rock to remain.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Owner. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract Time may be authorized for rock excavation.
 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
 - a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavations at Edges of Tree- and Plant-Protection Zones:
 1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.6 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
 1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 1. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
 2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.

3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
 4. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- D. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- E. Trenches in Tree- and Plant-Protection Zones:
1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
 3. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.7 SUBGRADE INSPECTION

- A. Notify Owner when excavations have reached required subgrade.
- B. If Owner determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

3.8 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Owner.
 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Owner.

3.9 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing and inspecting underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring and bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.11 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings.
- D. Backfill voids with satisfactory soil while removing shoring and bracing.
- E. Place and compact initial backfill of subbase material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
 - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches over the pipe or conduit. Coordinate backfilling with utilities testing.
- G. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- H. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.
- I. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.12 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.13 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.14 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:

1. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
2. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.15 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.

- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.16 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.17 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 1. Scarify or remove and replace soil material to depth as directed by Owner; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Owner.
 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

SECTION 312319 - DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes construction dewatering.
- B. Related Requirements:
 - 1. Section 312000 "Earth Moving" for excavating, backfilling, site grading, and controlling surface-water runoff and ponding.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer that has specialized in dewatering work.

1.4 FIELD CONDITIONS

- A. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
 - 1. Design dewatering system, including comprehensive engineering analysis by a qualified professional engineer.
 - 2. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
 - 3. Prevent surface water from entering excavations by grading, dikes, or other means.
 - 4. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.

5. Remove dewatering system when no longer required for construction.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.
 1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
 2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
- B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- C. Provide temporary grading to facilitate dewatering and control of surface water.
- D. Protect and maintain temporary erosion and sedimentation controls, which are specified in Section 311000 "Site Clearing," during dewatering operations.

3.2 INSTALLATION

- A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
 1. Space well points or wells at intervals required to provide sufficient dewatering.
 2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.
- B. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.
- C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
- D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.3 OPERATION

- A. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.
- B. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.
 - 1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
 - 2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
 - 3. Maintain piezometric water level a minimum of 24 inches below bottom of excavation.
- C. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.
- D. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

3.4 FIELD QUALITY CONTROL

- A. Observation Wells: Provide observation wells or piezometers, take measurements, and maintain at least the minimum number indicated; additional observation wells may be required by authorities having jurisdiction.
 - 1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.
 - 2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.
 - 3. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.
- B. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Owner if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.
- C. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.
- D. Prepare reports of observations.

3.5 PROTECTION

- A. Protect and maintain dewatering system during dewatering operations.
- B. Promptly repair damages to adjacent facilities caused by dewatering.

END OF SECTION 312319

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Cold milling of existing asphalt pavement.
 - 2. Hot-mix asphalt patching.
 - 3. Hot-mix asphalt paving.
 - 4. Hot-mix asphalt overlay.

- B. Related Requirements:

- 1. Section 024116 "Structure Demolition" for demolition and removal of existing asphalt pavement.
 - 2. Section 312000 "Earth Moving" for subgrade preparation, fill material, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include technical data and tested physical and performance properties.
 - 2. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and testing agency.
- B. Material Certificates: For each paving material.
- C. Material Test Reports: For each paving material, by a qualified testing agency.
- D. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by authorities having jurisdiction or INDOT.
- B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.
- C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of City of West Lafayette of INDOT for asphalt paving work.
 - 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 - 1. Prime Coat: Minimum surface temperature of 60 deg F.
 - 2. Tack Coat: Minimum surface temperature of 60 deg F.
 - 3. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
 - 4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone or crushed gravel.
- C. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
 - 1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

2.2 ASPHALT MATERIALS

- A. Asphalt Binder: AASHTO M 320.
- B. Tack Coat: ASTM D 977 emulsified asphalt, or ASTM D 2397 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
- C. Water: Potable.

2.3 AUXILIARY MATERIALS

- A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; reclaimed, unbound-aggregate base material from sources and gradations that have performed satisfactorily in previous installations, equal to performance of required hot-mix asphalt paving produced from all new materials.
- B. Joint Sealant: ASTM D 6690, Type II or III, hot-applied, single-component, polymer-modified bituminous sealant.

2.4 MIXES

- A. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and complying with the following requirements:
 - 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
 - 1. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Owner, and replace with compacted backfill or fill as directed.
- B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 COLD MILLING

- A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.
 - 1. Mill to a uniform finished surface free of excessive gouges, grooves, and ridges.
 - 2. Control rate of milling to prevent tearing of existing asphalt course.
 - 3. Repair or replace curbs, manholes, and other construction damaged during cold milling.
 - 4. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
 - 5. Patch surface depressions deeper than 1 inch after milling, before wearing course is laid.
 - 6. Handle milled asphalt material according to approved waste management plan required in Section 017419 "Construction Waste Management and Disposal."
 - 7. Keep milled pavement surface free of loose material and dust.
 - 8. Do not allow milled materials to accumulate on-site.

3.3 PATCHING

- A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.
- B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal./sq. yd.
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
- C. Placing Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.
- D. Placing Patch Material: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.4 REPAIRS

- A. Crack and Joint Filling: Remove existing joint filler material from cracks or joints to a depth of 1/4 inch.
 - 1. Clean cracks and joints in existing hot-mix asphalt pavement.
 - 2. Use emulsified-asphalt slurry to seal cracks and joints less than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.
 - 3. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.

3.5 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.6 PLACING HOT-MIX ASPHALT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
 2. Spread mix at a minimum temperature of 250 deg F.
 3. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
 4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
 2. Complete a section of asphalt base course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.7 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
1. Clean contact surfaces and apply tack coat to joints.
 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
 4. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
 5. Compact asphalt at joints to a density within 2 percent of specified course density.

3.8 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 96 percent of reference laboratory density according to ASTM D 6927, but not less than 94 percent or greater than 100 percent.
 2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent or greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.9 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
1. Base Course: Plus or minus 1/2 inch.
 2. Surface Course: Plus 1/4 inch, no minus.
- B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
1. Base Course: 1/4 inch.
 2. Surface Course: 1/8 inch.
 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.
- C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
 - a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than three cores taken.
 - b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
- E. Replace and compact hot-mix asphalt where core tests were taken.
- F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.11 WASTE HANDLING

- A. General: Handle asphalt-paving waste according to approved waste management plan required in Section 017419 "Construction Waste Management and Disposal."

END OF SECTION 321216